

REMARKS

In response to the action applicants have amended claim 1, reinstated formerly cancelled claims and submitted the Declaration of Dr. Jinru Bian. Applicants respectfully request reconsideration in view of the amendment, Declaration and the following remarks.

Applicants have amended claim 1 to include "R, is a substituted or unsubstituted aryl, alkyl, aralkyl, or alkaryl group and has a carbon chain length of 2 to 10 carbon atoms" to further define the particular claimed organic ammonium salts. The specification at paragraph 48 provides a basis for the limitation. In addition, Applicants have reinstated the previously cancelled claims as newly submitted claims 13 to 19. Independent claims 13 and 18 also contain the specific organic ammonium salt of claim 1; and amended claim 15 includes the "2 to 5" carbon atom range from paragraph 48. Applicants respectfully submit that the amendment and newly submitted claims enter no new matter.

Because the reinstated claims include restrictions at least as narrow as claim 1, Applicants respectfully submit that the newly submitted claims do not require an additional search for examination.

The action appears to inadvertently continue rejects claims 1 to 4 and 11 for obviousness-type double patenting in view of US. Pat. Pub. No. 2005/0031789 ('789 to Liu et al.)—the action appears to have only deleted one of the three double patenting rejection based on the '789 patent publication to Liu et al. Applicants respectfully submit that these rejections become moot in view of the earlier-filed terminal disclaimer--US Pat. Application No. 10/634,437, an equivalent to the cited '789 patent publication.

The action rejects claims 1 to 3 as being obvious under 35 U.S.C. § 103(a) in view of EP 1229093 ('093). Specifically EP '093 discloses hydrogen peroxide, an abrasive, an organic ammonium salt and imidazole. Imine (C=NH) and imine derivatives require a carbon to nitrogen double bond and the nitrogen atom bonded to only one carbon atom. Imidazole is a tautomer that shares an active hydrogen atom between two nitrogen atoms with the nitrogen atom bonded to two carbon atoms. Because imidazole lacks the bivalent radical with the nitrogen adjacent only one carbon atom, it is not an imine or imine derivative. Furthermore, imidazole (N-C-N structure) is not a hydrazine derivative, because it lacks a double nitrogen (N-N) structure. In addressing earlier-submitted arguments, the action notes that section 21 of the specification includes imidazole as the heterocyclyl group for the hydrazine. As noted in the Declaration of Dr. Bian, imidazole per se does not represent a hydrazine-imidazole derivative. Thus, since the '093 patent does not disclose the use of an imine derivative or hydrazine derivative for facilitating barrier removal and imidazole per se is different than the claimed hydrazine derivatives, Applicants respectfully submit that EP '093 does not disclose or suggest the claimed invention.

The action provisionally rejects claims 1 to 4 and 11 for obviousness-type double patenting in view of claims 1 to 7 of US. Pat. Pub. No. 2005/0236601 ('601 to Liu et al.). Since claims 1 to 7 lack either guanidine, hydrazine or their derivatives for use in polishing barrier materials, Applicants respectfully submit that the pending claims are patentably distinct in view of '601 to Liu et al.

The action provisionally rejects claims 1 to 4 and 11 for obviousness-type double patenting in view of claims 1 to 8 of US. Pat. Pub. No. 2005/0070211 ('211 to Liu et al.) in view of Liu et al. '789. Since claims 1 to 8 lack the quaternary ammonium salt for use in

polishing barrier materials, Applicants respectfully submit that the pending claims are patentably distinct in view of '211 to Liu et al. The USPTO applies the obviousness-type double patenting to restrict multiple patents claiming different subject matter to form the provisional rejection. Applicants respectfully submit that the combining of the references appears to represent a recognition that the claimed invention is patentably distinct. In view of the above, Applicants respectfully request withdrawal of the provisional double patenting rejection.

The action rejects claims 1 to 4 and 11 as being obvious under 35 U.S.C. § 103(a) in view of Wang et al. (US Pat. Pub. No. 2003/0170991). Wang et al. disclose the use of guanidine nitrate in Table 3 for copper removal slurries. These slurries have high copper to tantalum selectivity—the opposite of the claimed invention. In addition, Wang et al. in paragraphs 26 to 27 disclose quaternary ammonium salts for use as preferred stopping compounds. Wang et al. do not disclose or suggest a quaternary ammonium compound where R₁ is a substituted or unsubstituted aryl, alkyl, aralkyl, or alkaryl group and R₁ has a carbon chain length of 2 to 10 carbon atoms. Furthermore, Wang et al. do not disclose or suggest adding a quaternary ammonium salt to a barrier removal slurry for improved dielectric removal rate. Paragraph 26 in particular discloses that the stopping compound reduces barrier removal rate of materials such as Ta and TaN. This also teaches away from Applicants' claimed invention. Applicants respectfully submit that Wang et al. do not disclose or suggest a quaternary ammonium compound where R₁ is a substituted or unsubstituted aryl, alkyl, aralkyl, or alkaryl group and R₁ has a carbon chain length of 2 to 10 carbon atoms, do not teach adding these compounds to a barrier slurry and teach quaternary ammonium compounds in general

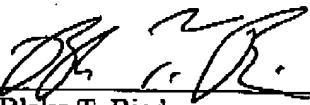
would have a detrimental impact on barrier polishing. Applicants respectfully submit that claims 1 to 4 and 11 are not obvious in view of Wang et al.

Applicants respectfully request reconsideration of the amended claims. If a telephone call would expedite matters, then please call me at 302-283-2136.

Respectfully submitted,

2-17-06

Date



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